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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,390	07/10/2007	Scung-Hwan Yi	P07596US00	5992
22885 7590 01/09/2008 MCKEE, VOORHEES & SEASE, P.L.C. 801 GRAND AVENUE SUITE 3200 DES MOINES, IA 50309-2721			EXAMINER TANINGCO, MARCUS H	
			ART UNIT 2884	PAPER NUMBER
			MAIL DATE 01/09/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/596,390	<b>Applicant(s)</b> YI ET AL.	
	<b>Examiner</b> Marcus H. Taningco	<b>Art Unit</b> 2884	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-25 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-15 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>08/24/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### **Drawings**

At least Figures 1, 2, and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### **Claim Rejections - 35 USC § 112**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3/1, 5, 10, 13/11, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3/1 and 13/11 recite the limitation "plurality of gas diffusion halls" in lines 1 and 2. There is insufficient antecedent basis in claim 1 and claim 11, respectively, for this limitation in the claim.

Claim 10 recites the limitation "the support plate" in lines 1 and 3. There is insufficient antecedent basis for this limitation in the claim. Note that claim 2 recites both a lower and upper support plate.

Claim 15 recites the limitation "the horizontal support plate" in lines 3 and 4. There is insufficient antecedent basis for this limitation in the claim. Note that claim 12 recites both a lower and upper support plate.

The term "advantageously" in claim 5 is a relative term which renders the claim indefinite. The term "advantageously" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

### **Claim Objections**

Claim 10 is objected to because of the following informalities: Claim 10 recites the phrase "the infrared optical" which should include the term "source". Appropriate correction is required.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 7, 9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Martin (US 6,194,735).

With regards to claims 1 and 11, Martin discloses a gas sensor (Figs. 3-8) comprising: a gas chamber (2) for housing a sample gas; a gas opening (1b) for exhausting the sample gas from the gas chamber; an optical source (2a) for projecting infrared toward the sample gas; and an infrared sensor (10) for sensing the intensity of the infrared which has passed through the sample gas, characterized in that: the wall of the gas chamber is composed of two opposing concave mirrors (12, 13) having different focusing distances but a common focus (see generally Fig. 8), characterized in that: the wall of the gas chamber is composed of two opposing concave mirrors having different focusing distances but a common focus, and the concave mirrors have curvatures such that the incident light which is parallel to the axis of the concave mirror reflects on the surface of the concave mirror and passes through the focus of the concave mirror, and that the incident light, which has passed through the focus of the concave mirror reflects on the surface of the concave mirror and propagates parallel to the axis of the concave mirror (see generally Fig. 8).

With regards to claims 2 and 12, Martin discloses said gas opening comprises a gas vent (4) located at a certain wall of the gas chamber and a plurality of gas diffusion holes (1c) disposed on the upper support plate of the gas chamber (Fig. 3).

With regards to claim 7, Martin discloses said gas chamber contains a parabolic reflecting mirror integrally formed with the support plate of the gas chamber adjacent to the infrared optical source formed at the support plate (Figs. 2 and 3).

With regards to claim 9, Martin discloses said infrared optical source is disposed on the focus of the parabolic mirror (Fig. 8).

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-6, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin.

With regards to claims 3, 5, and 13, Martin discloses said gas diffusion halls (1c), but fails to teach said halls are covered by gas filters/detachable cap. Filters/caps, however, are well known in the art and it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Martin by covering said diffusion halls in order to block unwanted gas/particles.

With regards to claim 4, Martin discloses a plurality of diffusion halls (1c) is disposed on the axis of the incident light from the infrared sensor (Fig. 3).

With regards to claims 6 and 14, Martin discloses said concave mirrors comprise highly reflective surfaces, but fails to specifically teach said mirror is plated by or deposited with gold. Nevertheless, those skilled in the art appreciate that, absent some degree of criticality, utilizing a gold surface would have been a matter of routine design choice that would have been within the skill of a person of ordinary skill in the art depending on the needs of the particular application.

#### **Allowable Subject Matter**

Claims 16-25 are allowed.

Claims 8, 10, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

With regards to claim 8, prior art fails to teach a light outlet for projecting at least a part of the infrared light from the infrared optical source is formed on the support plate of the gas chamber.

With regards to claim 10, prior art fails to teach the said support plate of the gas chamber is attached with a height compensation structure for compensating the inclination of the support plate due to the height of the infrared optical source.

With regards to claim 15, prior art fails to specifically teach a parabolic reflecting mirror formed so that the parabolic reflecting mirror causes the incident light from the infixed source to propagate in parallel with the horizontal support plate of the gas chamber.

With regards to claim 16 and 24, prior art fails to teach the cross-section of the concave mirror is a circular arc, wherein the central points of the two circular arcs exist on the same axis.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus H. Taningco whose telephone number is (571) 272-1848. The examiner can normally be reached on M - F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*Marcus Taningco*  
*Patent Examiner*  
*GAU 2884*

  
CONSTANTINE HANNAHER  
PRIMARY EXAMINER